AUSTRALIAN PROPERTY RESEARCH
ASSET RETURNS: PAST, PRESENT AND FUTURE

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INSIDE

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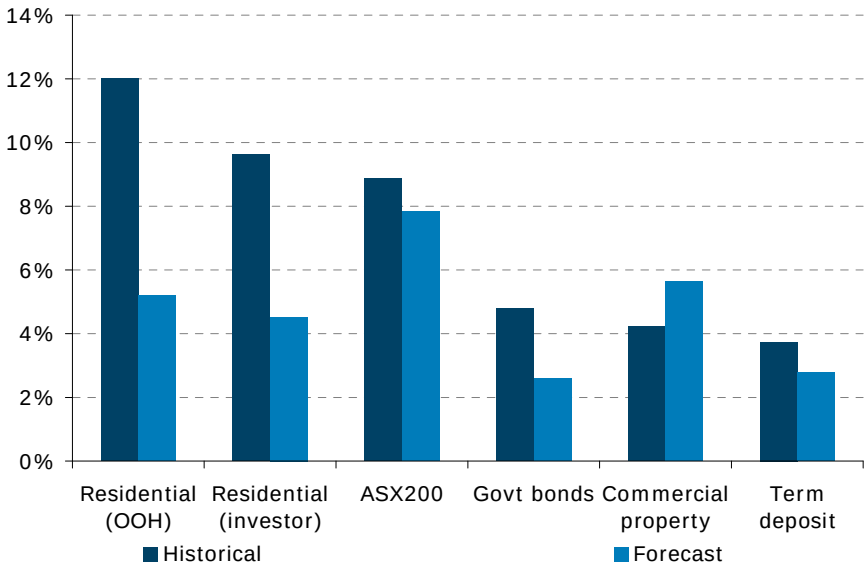
To compare returns across asset classes over the past 24 years, we have reviewed the after-tax and after-cost returns of the major investment asset classes. Included are owner occupied housing, investor housing, commercial property, equities (the ASX 200), government bonds and term deposits. Returns were compared over a range of different leverages. Returns were then risk-adjusted and compared on the basis of expected returns.

KEY POINTS

- **Residential property was the highest returning asset over the past 24 years.** Even when costs and taxes were factored in, owner-occupied housing (OOH) generated the highest average annual total returns (12.0%), followed by investor housing (9.6%) and equities (8.9%).
- Both owner occupied and investor housing indexes generated higher returns at a lower risk than equities. Residential property had a much lower Value at Risk (VaR) and higher Sharpe ratio than equities or commercial property.
- However, our *forecast* of asset class returns shows that equities will be the strongest performer over the next 10 years. Commercial property also shows strong returns, sitting between equities and OOH. The forecast model, however, is very sensitive to assumptions.
- Risk adjusted forecasts show that equities and commercial property will have similar returns. Despite having a higher return, the increased risk in equities gives it a similar risk adjusted return to commercial property.

FIGURE 1. COMPARISON OF HISTORICAL AND FORECAST AVERAGE ANNUAL RETURNS (AFTER COSTS, TAXES AND GEARING)



Sources: ABS, RP Data-Rismark, IPD Australia Property Investment Digest,DataStream, S&P, RBA, ANZ

ASSET RETURNS

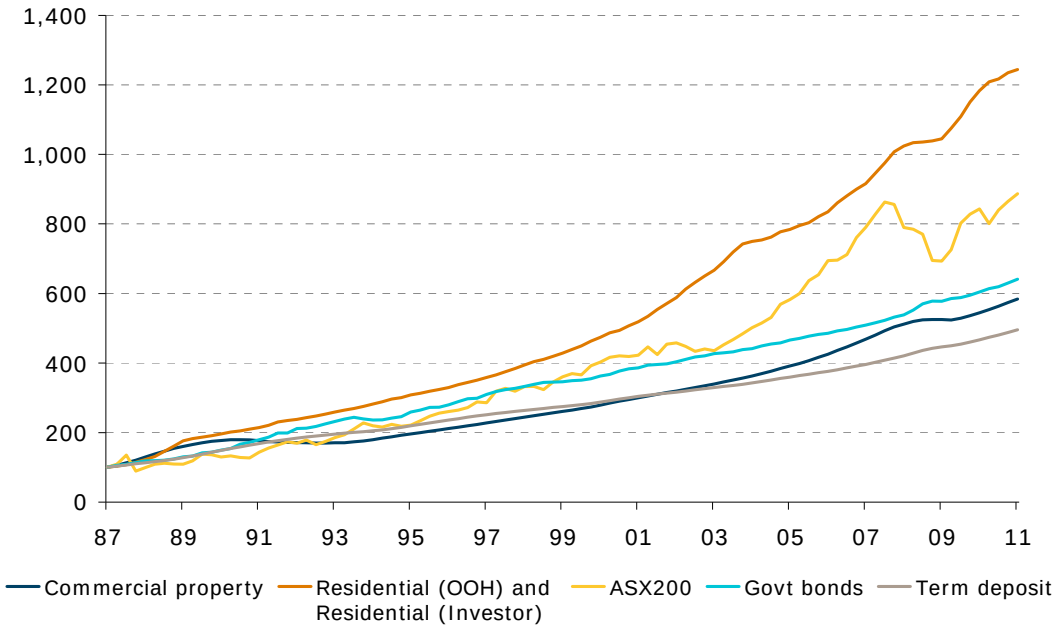
LOOKING BACK: THE SIMPLE COMPARISON

To compare the returns of each asset class, we initially used a simple stylised model that assumes no debt, transaction or maintenance costs or taxes. We also removed the unrealistic assumption that an investor can re-invest their cash flows into their property assets (that is, one can't buy an extra 1% of a house)[1]. In order to keep the analysis consistent, we have assumed that none of the asset classes reinvest their cash flows.

Any income (rent or dividends) was deposited into a term deposit account, where the account accrues interest (using historical term deposit rates). The total value of the asset was then calculated by adding the term deposit balance to the asset's present capital value, which could then be used to calculate the total return over the period.

Below are the returns for each of the asset classes under zero costs, debt and taxes.

FIGURE 2. TOTAL RETURN INDEX (BEFORE COSTS, DEBT AND TAXES)



Sources: ABS, RP Data-Rismark, IPD Australia Property Investment Digest,DataStream, S&P, RBA, ANZ

Figure 2 is often shown by property analysts to illustrate housing's superior historical returns and modest risk profile when compared to its peers. The second best performing asset was equities, which show a more modest return for a much higher level of risk[2,3].

Commercial property underperformed government bond returns over almost the entire period. This was due to weak office and industrial sector performances.

[1] We later loosen this assumption in the more detailed model and assume the investor uses excess cash flows to reduce the debt burden of their property or asset.

[2] We later analyse asset returns taking into account each asset's risk.

[3] Returns for Residential (OOH) assume imputed rent, discussed in detail in Appendix 2.

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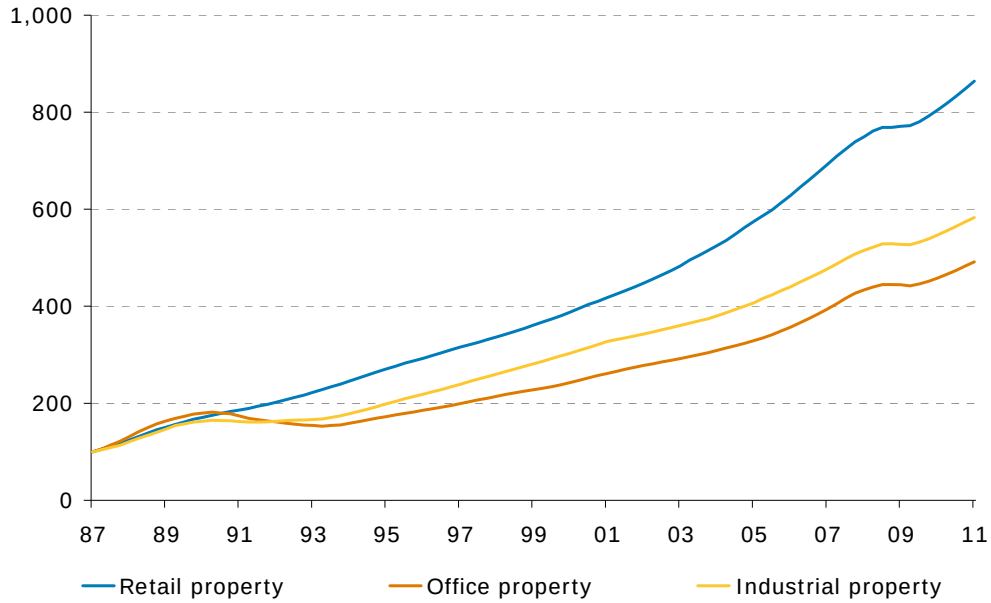
Figure 3 shows that retail property actually performed quite strongly, outperforming office and industrials by a strong margin. It can also been seen that office and industrial property experienced marked downturns from 1990 to 1994 resulting from the early 90s recession and associated high vacancies.

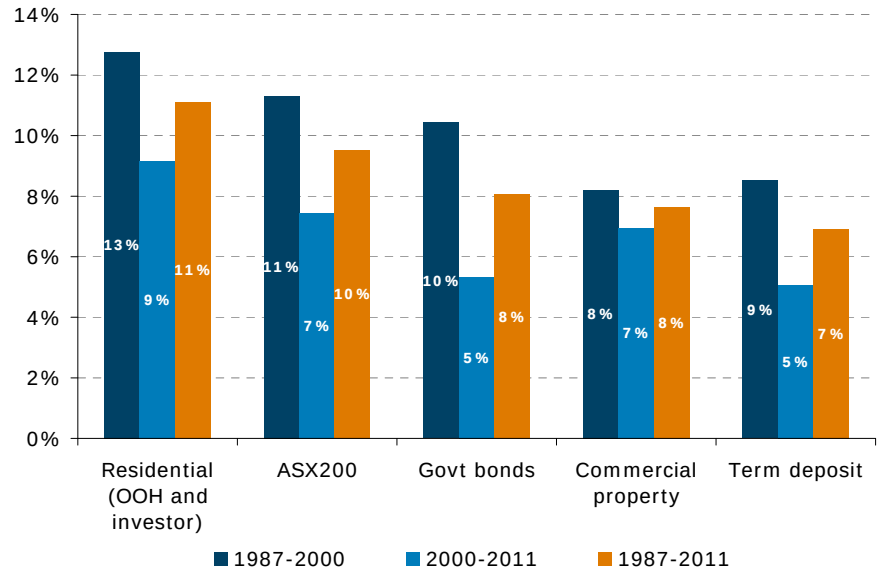
FIGURE 3. TOTAL RETURNS FOR COMMERCIAL PROPERTY



Sources: IPD Australia Property Investment Digest, RBA

Figure 4 shows the returns for each of the past two decades. This chart helps to adjust for the 'scaling illusion' that occurs in Figure 2, where earlier returns look smaller. All assets had stronger returns in the late '80s and '90s, but housing had the highest returns in both time periods.

FIGURE 4. AVERAGE ANNUAL RETURNS (CAGR)



Sources: ABS, RP Data-Rismark, IPD Australia Property Investment Digest,DataStream, S&P, RBA, ANZ

ASSET RETURNS

WHAT DIFFERENCE DOES IT MAKE IF TAX AND COSTS ARE CONSIDERED?

A common criticism of simple return models is that housing attracts a number of costs that other assets do not. These include maintenance costs, stamp duty and agents commissions (on sale and rent). We have accounted for these costs as realistically as possible. We have also included tax with a marginal income tax rate of 45% being assumed, as well as capital gains tax[4] and stamp duty[5].

The following costs were assumed to be incurred by each of the assets:

TABLE 1. COST AND TAX ASSUMPTIONS[6]

Property costs (commercial and residential)	Amount (p.a.)	Timing of cost
Agents commission on sale (% of sale price)	2.5%	On sale
Agents commission on rent (% of rent)	7.0%	Quarterly
Maintenance costs (% of current price, investor)	1.8%	Quarterly
Maintenance costs (% of current price, owner)	1.2%	Quarterly
Equity/bond/term deposit costs		
Nil		
Taxes		
Marginal tax rate	45.0%	Quarterly
Stamp duty (% of purchase)	5.0%	On purchase

Source: ANZ

The costs associated with commercial property were the same as investor housing, with the exception of maintenance costs. Maintenance costs for commercial property were already accounted for in its income data, which is presented in net terms.

Detailed reasoning behind our assumptions can be found in Appendix 2.

We have also taken into account interest costs. If an asset has needed to draw from a debt account, it was charged interest, which was re-capitalised into a debt account. Any interest payments were also fully deductable, allowing for negative gearing. Interest was charged at the historical rate that is appropriate for the asset class. That is, commercial property and equities paid the higher debt rate that existed at the time. For data that was not available back to 1987, (as was the case for margin loans and a short period of business loans) an average spread from the standard variable home loan rate was added to past standard variable home loan rates[7].

If an asset made money in a quarter, the money is used to pay off any outstanding debt. If no debt was outstanding, then a term deposit was created and interest accrued (which was taxed).

[4] We have assumed that current capital gains tax laws have applied over the whole period; from 1987 to 2011. Capital gains tax laws were introduced in 1985 and amended to its current form in 1999.

[5] We have used a stamp duty based on Victorian averages. See Appendix 2 for details.

[6] Although rent is generally paid monthly and tax is paid yearly, it was found that assuming quarterly cash flows had an immaterial effect on the results.

[7] Calculated using RBA data, Table F5 Indicator Lending Rates

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A gearing level of 50% was assumed for all assets, except for term deposits and government bonds. Government bonds and term deposits were excluded from leveraging as their effective total return level is always less than the debt rate, so leveraging would result in lower returns. Returns were measured based on the return on equity.

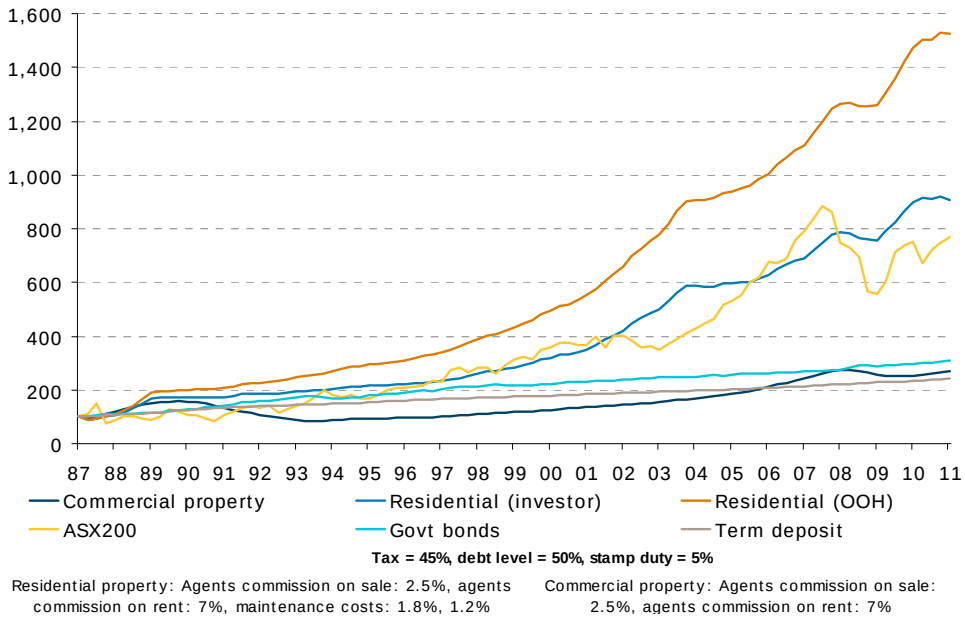
The upward effect on returns from property owners renovating and improving properties was not accounted for in this analysis.[8]

THE RESULTS

Figure 5 shows the cumulative total return index for each asset after costs, debt and taxes. Owner occupied housing showed by far the highest returns, even outperforming investor property. This was due to a number of factors, the most significant being owner occupied housing's exemption from capital gains tax (CGT). Assuming an initial investment of $100,000 in 1987, exemption from CGT resulted in an additional return of $200,000 giving a total return of $1,428,000 over 24 years. The waterfall chart in Appendix 3 reconciles the differences in return between OOH and investor housing, assuming an initial investment of $100,000.

Investor housing performed slightly better than equities over the time analysed[9].

FIGURE 5. TOTAL RETURNS AFTER COSTS, DEBT AND TAXES



Sources: ABS, RP Data-Rismark, IPD Australia Property Investment Digest,DataStream, S&P, RBA, ANZ

[8] Costs associated with renovations, the proportion of renovation investment between owner-occupied and investor housing, as well as the return attributed to renovations are unobservable. This makes accurate adjustments for renovations in the housing index very difficult. This is discussed further in Appendix 6.

[9] Our analysis assumes no depreciation deductions, allowing for a depreciation of 50% of the investment at 2.5% p.a. increases the final return index to 936. This is an average annual return of 9.8%, compared to 9.6% originally.

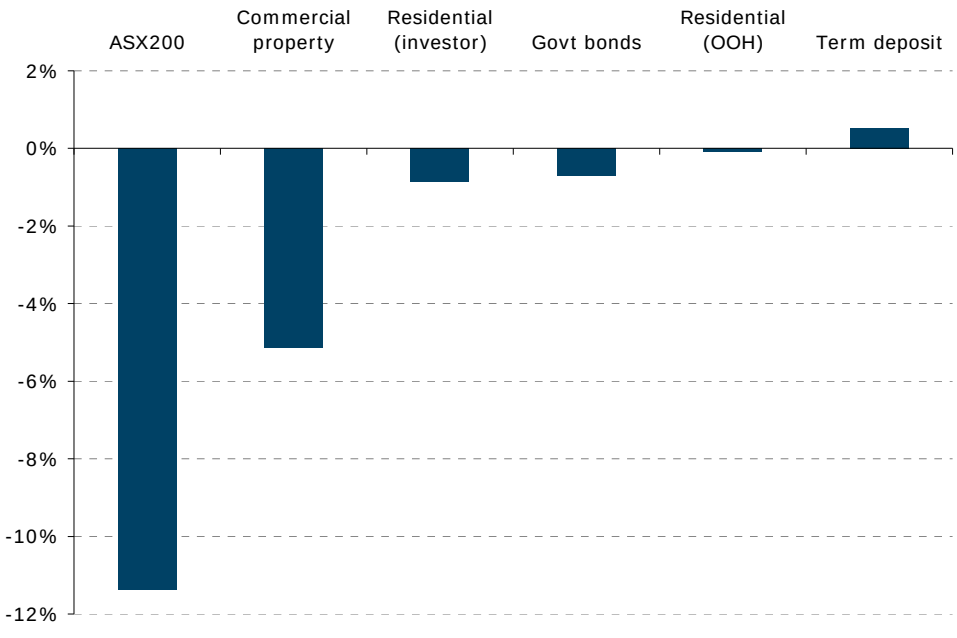
RISK ANALYSIS

Value at Risk (VaR)

Value at risk measures the potential loss from extreme price movements. The VaR is the least amount of money you would expect to lose for a given time period and confidence interval. For example, if the VaR on an asset is -15% at a one quarter, 95% confidence level, there is only a 5% chance an asset will drop more than 15% for a given quarter. Generally the VaR is a negative value, that is, the extreme case is that you would lose money. In some assets, however, if the returns are high and there is little variation, then a positive VaR can occur. That is, the worst case scenario is that you will make money.

From this section onwards, we will focus only on returns after incorporating taxes, costs and debt. We assume a tax rate of 45%, a gearing level of 50%, and the costs outlined in Table 1 are incurred.

FIGURE 6. VAR FOR EACH ASSET AFTER TAXES, COST AND DEBT (QUARTERLY, 95TH PERCENTILE).



Sources: ABS, RP Data-Rismark, IPD Australia Property Investment Digest,DataStream, S&P, RBA, ANZ

Due to its high volatility, equities showed the highest VaR. Commercial property showed a slightly more modest VaR, which was largely due to the large losses experienced in the early '90s recession. OOH had a very low VaR (-0.1%), due to the low volatility of returns over the whole period[10]; this was also less than the VaR of government bonds. Term deposits had a VaR of +0.5%, that is, the 95% worst case scenario would be to *gain* 0.5%.

[10] The housing index used to calculate risk is more diversified than a single house, so this would underestimate housing risk. For more detail, see Appendix 5

ASSET RETURNS

THE SHARPE RATIO

The Sharpe ratio is another way to measure risk and takes into account both risk and returns. The ratio increases if the asset's return increases, or if its risk decreases. It is the ratio of an asset's excess return over its standard deviation, where excess return is the asset's return greater than the risk free rate. The risk free rate used was the 1-year Australian government bond[11].

TABLE 2. HISTORICAL SHARPE RATIOS

Sharpe ratio breakdown	Residential (OOH)	Residential (investor)	ASX200	Commercial property
Avg excess return	8.9%	6.5%	4.8%	0.4%
Std dev of excess returns	12.1%	10.3%	18.2%	11.4%
Sharpe ratio	**0.74**	**0.63**	**0.26**	**0.03**

Sources: Bloomberg, ABS/RP Data-Rismark, IPD Australia Property Investment Digest, DataStream, S&P, RBA, ANZ

Owner occupied housing had the highest Sharpe ratio of all assets. Investor housing also performed very well, only slightly behind owner occupied, due to lower returns and a similar risk profile. Residential property's higher Sharpe ratio was driven by strong returns and low volatility. Equities performed relatively poorly due to having lower returns *and* higher risk.

Commercial property also underperformed when measured by the Sharpe ratio. Commercial property's weak performance was largely due to its very weak returns rather than volatility. As mentioned earlier this was the result of very poor returns in office and industrial property. The Sharpe ratio was supported by commercial property's lower volatility, but nowhere near what would be required to compete with residential property.

Commercial Property did not produce returns high enough to improve returns with leverage. If an asset produces returns less than the interest rate needed to fund the asset, then increased leverage will reduce returns. This was also a contributing factor to its very low Sharpe ratio.

[11] There were no 1-Year government bonds on issue between 30/06/1990 and 31/12/1991. In these years the risk free rate was interpolated.

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Disclaimer: the forecast assumptions represent ANZ Research's view of average annual returns over the decade ahead. The forecasts deliberately look through short to medium term cycles. The reasoning behind these simplified metrics are explained in detail in Appendix 4.

LOOKING AHEAD

In this section we have generated a series of forecasts using the same model and approach we used to analyse historical returns. This model includes tax, costs and debt and is based on the key assumptions listed in Table 3 below.

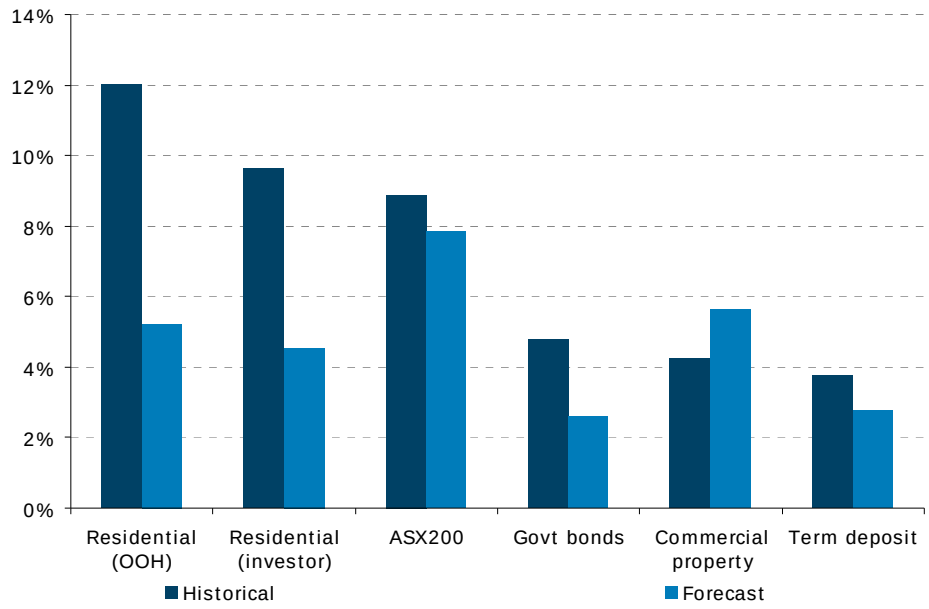
TABLE 3. KEY FORECAST ASSUMPTIONS (BEFORE TAX AND COSTS)

(We have used an average annual rate for returns)

Commercial property		Equities	
Capital growth	2.5%	Capital growth	5.0%
Rental yield	7.0%	Dividend yield	4.0%
Total return	**9.5%**	**Total return**	**9.0%**
Residential property		**Government bonds**	
Capital growth	5.0%	Capital growth	0.0%
Rental yield	3.0%	Coupon yield	4.5%
Total return	**8.0%**	**Total return**	**4.5%**
Lending/borrowing rates		**Interest margins (over the loan rate)**	
Loan rate	7.0%	Equities	1.2%
Deposit rate	5.0%	Commercial property	1.0%

Source: ANZ

FIGURE 7. FORECAST AVERAGE ANNUAL RETURNS (AFTER TAX AND COSTS)



Source: ANZ

Figure 7 suggests that equities will be the highest returning asset in the decade ahead (after costs, taxes and leverage), despite commercial property having the highest assumed raw total returns.

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This is due to two factors. The first is that commercial property produces large cash flows, which are taxed at the full marginal tax rate. Equities, however, are assumed to deliver a higher proportion of its returns through capital gains, which are only taxed at half of the marginal tax rate. The second is simply because higher stamp duties reduce property returns.

The forecast shows that OOH returns will *reduce* under leverage. This is because the total return of owner occupied housing (after tax and costs) is less than the cost of debt, under our assumptions. This was not the case for investor housing or equities as the cost of debt is an allowable deduction, almost halving the cost of debt for these assets.

The effect of renovations on returns for residential property have been analysed and are detailed in Appendix 6.

The output for this model is highly sensitive to our assumptions. Increasing capital returns for housing by just over 1% increases housing returns to equal equities returns. In a similar vein, decreasing average equity capital returns 1.5% brings it level to investor housing.

RISK ADJUSTED RETURN

Using the forecast returns from the previous section and historical measures of risk, we can estimate the Sharpe ratio for future returns.

TABLE 4. FORECAST SHARPE RATIOS

Sharpe ratio breakdown (forecast)	ASX200	Commercial property	Residential (OOH)	Residential (investor)
Avg excess return	5.4%	3.2%	2.7%	2.0%
Std dev of excess returns	18.2%	11.5%	12.2%	10.4%
Sharpe ratio	**0.29**	**0.27**	**0.22**	**0.20**

Sources: Bloomberg, ABS/RP Data-Rismark, IPD Australia Property Investment Digest, DataStream, S&P, RBA, ANZ

After risk adjustment, equities and commercial property are expected to perform roughly on par. Equities showed by far the highest excess return, however, a much higher risk level kept its Sharpe ratio level with commercial property.
Both commercial and owner occupied housing showed similar excess returns and risk levels.

The results from this forecast are extremely sensitive. An increase in (before tax) forecast returns of any of the assets by 1% can change the Sharpe ratio by more than a factor of 2. Therefore, these results should be treated with extreme caution.

From a risk adjusted perspective, equities and commercial property have similar returns.

APPENDIX 1

DATA SOURCES

In our analysis, we compare 6 different major asset classes. Each of the asset classes and the return proxy that we used are summarised in the table below:

TABLE 5. DATA SOURCES

Asset class	Return index source
Residential property	ABS, RP Data-Rismark housing data, national index, capital city average
Commercial property	IPD Australia Property Investment Digest
Equities	1987-1992: S&P ASX 200 Total Return Index (Datastream calculated), 1992-2011: S&P ASX 200 Total Return Index (S&P calculated)
Bonds	Datastream AU government bond index (all maturities)
Term deposits	RBA data: Table F5 Indicator Lending Rates

Source: ANZ

The base date for the analysis used was the 31st of March 1987, the earliest possible date where all of the required data was available. This gives us a historical data sample of 24 years, covering periods of structurally high bond yields and a number of cycles for each of the asset classes.

Finding data on the cash yield and capital growth for each asset was critical in calculating after tax returns. This was particularly the case for assets that produce large cash flows which are taxed at the full marginal income tax rate, while assets that create returns through capital gains are taxed only at half of the marginal income tax rate (assuming the asset has been held for at least 1 year).

The S&P ASX200 total return index provides information on average dividend yields and capital price growth. In order to try and estimate the benefit of franking of dividends, the average amount of franking credit paid was assumed to be equivalent to a frankable company tax rate of 27%. This is the average that was issued by the SPDR S&P ASX 200 index tracking fund since mid 2002 when the company started reporting.

The average coupon rate and price growth for a portfolio of Australian government bonds were tracked using the Datastream Government Bond Index (all maturities).

Both the ABS and IPD data provide information on capital price growth and rental yields for each quarter.

APPENDIX 2

HISTORICAL COST ASSUMPTIONS

Maintenance costs were assumed to be 1.2% of the value of the property for OOH. This cost includes a number of common expenses for owner occupied housing, such as council and water rates, insurance, plumbing and general maintenance.

Maintenance costs for investor housing were assumed to be 1.8% of the value of the property. This includes the 1.2% of costs assumed for OOH, as well as other costs, such as advertising, GST on fees, real-estate fees and management fees.

Ongoing costs for equities were assumed to be zero. Typical costs for equities were transaction fees and implied costs through the bid-ask spread. These usually occur only at transactions, and were insignificant when compared with other larger costs suffered by other asset classes (such as stamp duty).

A very important assumption that we have made is that OOH earns imputed rent, and that this is not subject to tax. Imputed rent is an implied form of rent that reflects that the investor no longer has to pay rent for somewhere to live. The amount of imputed rent is equal to the gross rental yield that would have been received for an investment property. This imputed rent is not subject to tax as the investor would have had to pay rent with after-tax earnings. That is, imputed rent is an after-tax saving.

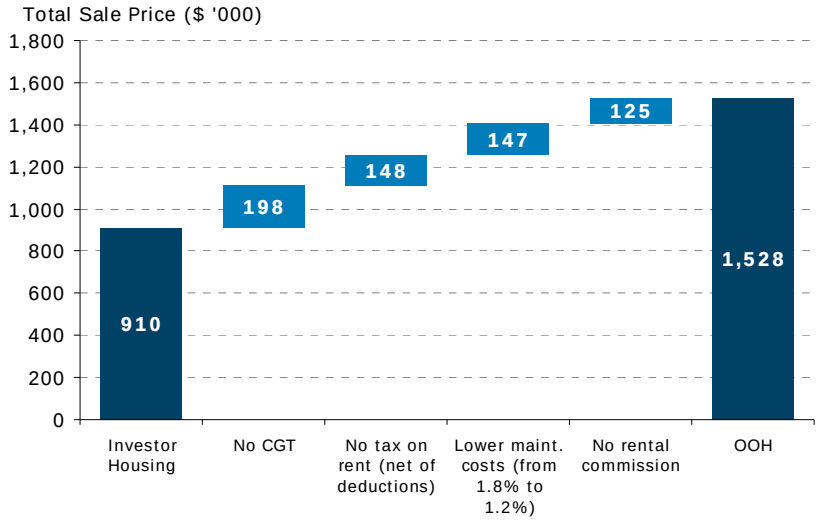
Stamp duty rates vary from state to state. In our analysis we have assumed a rate of 5%. This is about the rate of stamp duty that would be applied to the average house price ($555,000[12]) if it were sold today in Victoria. It was noted that if the house were sold in other states the figure would vary, however, over such a long investment period the stamp duty assumption was found to be insignificant. A sensitivity analysis found that a 1% change in stamp duty resulted in a change in CAGR of about 0.06% over the whole investment period.

All property was assumed to be subject to agents commissions. These fees included weekly rental commissions and the agent's commission at sale. For simplicity, we have assumed a constant rental commission of 7%, which is fairly typical of both residential and commercial property. The sales commission was assumed to be 2.5%. It was noted that both of these vary between properties and locations. Imputed rent on OOH was assumed not to have any rental commission, as the rental payment already includes the commission when it is paid to the real estate agent.

[12] RP Data-Rismark

APPENDIX 3

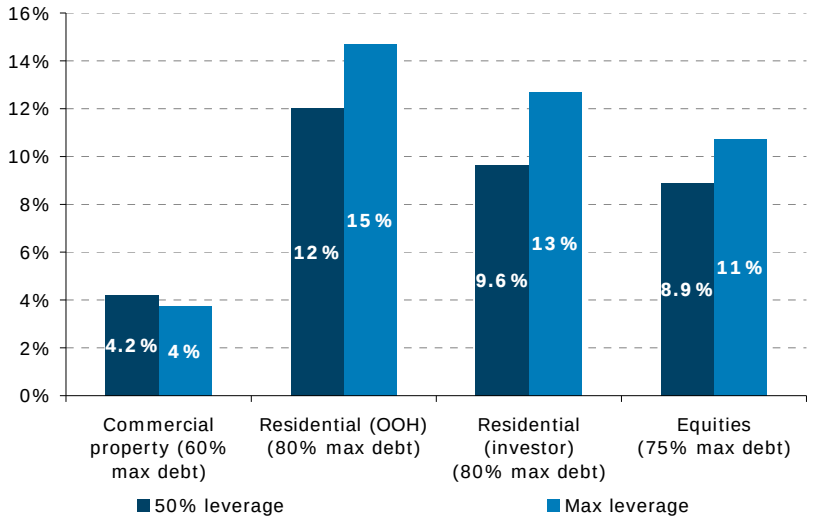
FIGURE 8. DIFFERENCES OF RETURN BETWEEN INVESTOR HOUSING AND OWNER OCCUPIED HOUSING[13]



Sources: ABS, RP Data-Rismark, RBA

This chart reconciles the returns between investor housing and owner occupied housing (OOH). For an investment of $100,000 in 1987 into investor housing, you would have a final return of $810,000 today. For OOH, you would have a return of $1,428,000 today for the same initial investment.

FIGURE 9. COMPARISON BETWEEN AVERAGE ANNUAL RETURNS AT 50% LEVERAGE AND MAXIMUM POSSIBLE LEVERAGE



Sources: ABS, RP Data-Rismark, IPD Australia Property Investment Digest, DataStream, S&P, RBA

[13] No tax on rent (net of deductions): Imputed rent is money saved from not having to rent. It is an after-tax saving and is therefore an untaxed benefit. This was netted from lost allowable deductions, such as interest expenses.

Figure 9 shows that over the entire period analysed (1987 to 2011), all properties except commercial property gained from higher leverage. This period included two downturns for commercial property, with the 1990s recession particularly hurting returns. Leveraging after this period would have produced much more favourable results.

APPENDIX 4

FORECAST GROWTH ASSUMPTIONS

We have assumed that housing prices will rise by 5% p.a. over the period, in line with expected growth in average household incomes. This means that housing affordability will be roughly capped at its current levels. We also assume no *structural* shift in interest rates for the next ten years. Finally, we have assumed rental yields for housing converge to 3%.

The ASX 200 is assumed to have a gross (adding back franking credits) return of 9%. Looking forward, we expect trend growth in Australia to slow moderately over the next decade due to an aging labour force. Equities have also enjoyed high capital appreciation resulting from freer access to debt (due to bank deregulation), as well as structurally lower interest rates. However, these effects have run their course, and are not expected to add to future capital growth. The proportion of return distributed through dividends and capital gains was based on historical averages.

The levels set for borrowing rates, government bond rates, and deposit rates were based on long run forecasts. We have assumed that rates will be largely the same over the next 10 years. Interest margins over the standard variable rate for equities and commercial property were established from averages over the last 10 and 20 years respectively.

APPENDIX 5

CONCENTRATION RISK

In this report we have used aggregate price indexes to represent the price of each asset class. It should be recognised that the diversification implicit in the aggregate index eliminates some of the volatility of the individual assets that make up the index.[14]

Diversification in property is arguably more difficult than in stocks, due to the higher entry level for individual assets. Hence, concentration risk is more of an issue for property investors.

However, we have kept assumptions consistent between all asset classes in the report. That is, each of the assets returns were subject to the same marginal tax rate, leverage, purchase and sale dates, as well as initial investment.

[14] Diversification is the advantage of reducing the riskiness of your returns by holding many assets.

APPENDIX 6

RENOVATION EFFECTS ON RETURNS

When analysing historical returns, we omitted any analysis on the returns property investors might have received from renovating their properties. This was because the costs associated with these renovations, the proportion of between owner-occupied and investor housing, as well as the return attributed to these renovations, are unobservable. However, the effects of renovations on returns can be estimated in the *forecast* return model, if we make assumptions about each of the above unknowns. A summary of our base assumptions are tabulated below:

TABLE 6. RENOVATION ASSUMPTIONS

Assumption	Value
Annual Renovation Cost	1%
Return Ratio	1
Proportion OOH	80%

Source: ANZ

Here we assume average renovation costs are 1% of the value of the property per annum. This is the long-term average proportion of total alterations and additions expenditure to the value of total housing stock. We assume that for every dollar invested in renovations, the investor will receive back at sale (i.e. a return ratio of 1). Finally, we assume that the proportion of total renovation investment is in OOH is 80%; this is an arbitrary value based on the assumption that investor property owners would be reluctant to renovate properties for their tenants.[15]

TABLE 7. RETURN COMPARISONS (AFTER COSTS, TAXES AND GEARING)

Returns	Investor	OOH
With Renovations	5.0%	5.7%
No Renovations	4.9%	5.9%

Source: ANZ

Adding the assumption of renovations does not materially affect returns, with a difference of no more than 0.2%. The investor housing stock will actually return slightly higher, due to the tax-deductibility capital improvement.

[15] Some investor property owners may renovate in order to improve the likelihood of gaining tenancy. There may be additional investment by investors/builders who purchase run-down properties to refurbish and sell at a profit. Both of these investor groups are assumed to be collected in the 20% of investor property that undergo renovations.

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